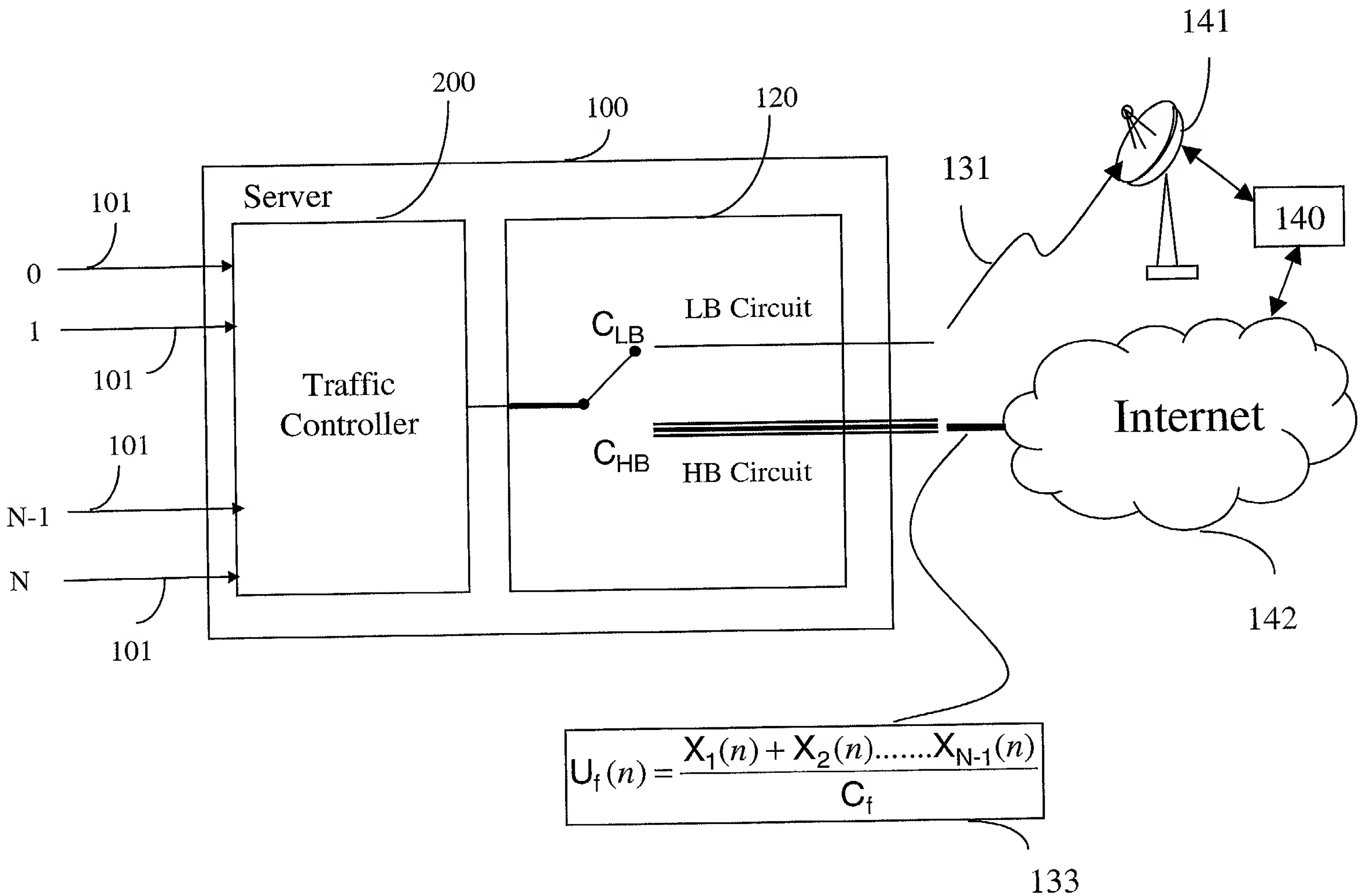
200
100
120
141
131
140
101
Server
0
1
101
Traffic
Controller
C_{LB}
LB Circuit
C_{HB}
HB Circuit
Internet
101
N-1
N
101
142
$U_f(n) = \frac{X_1(n) + X_2(n) \ldots\ldots X_{N-1}(n)}{C_f}$
133

Fig.1

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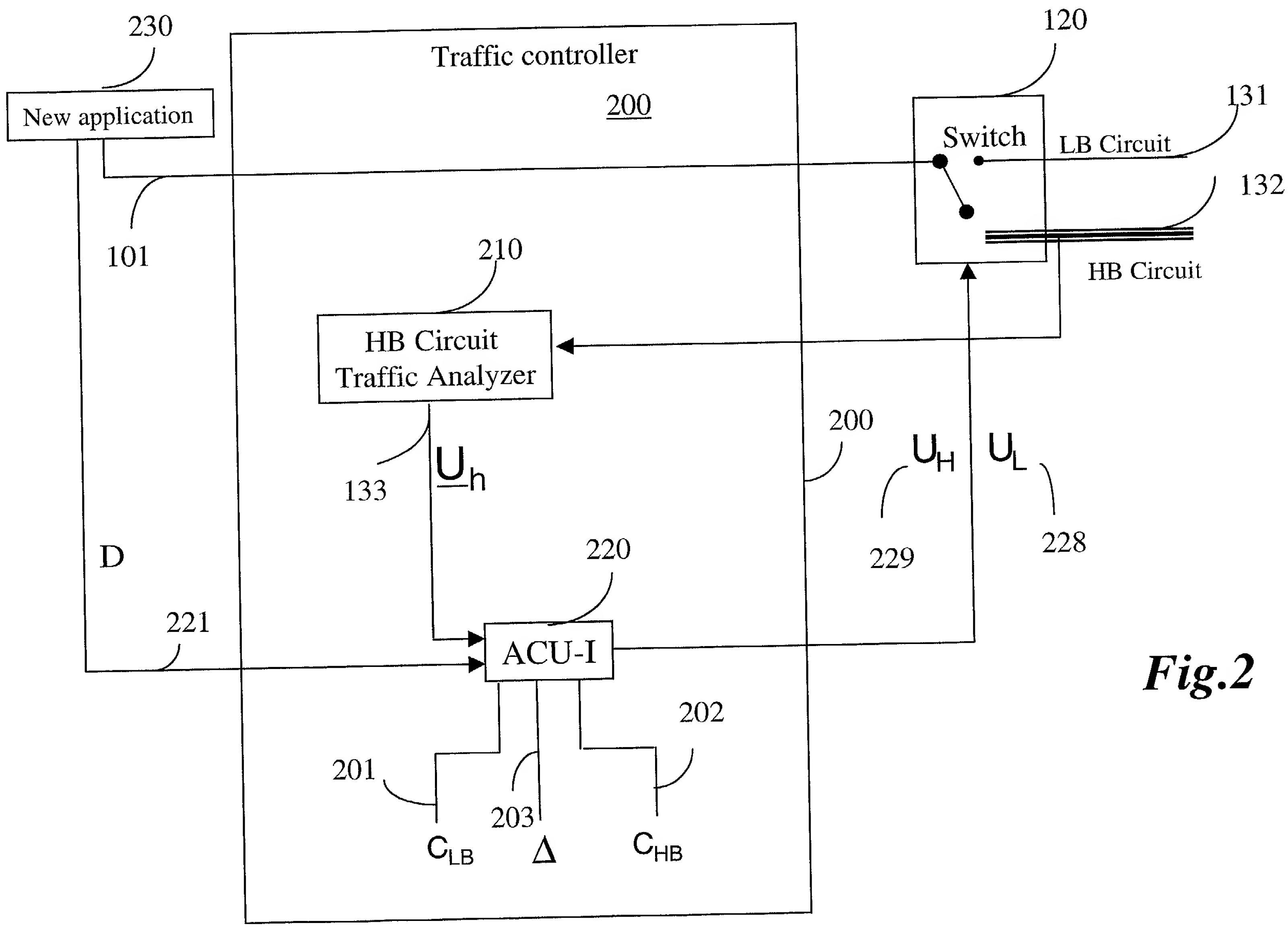

Fig.2

ACU-I

If $\frac{D}{C_{hb}} < 1 - \frac{1}{M}\left(\sum_{i=0}^{M-1} U(n-1)\right) - \Delta$

301 {assign the high bandwidth circuit}

Else If $\frac{D}{C_{lb}} < 1$

302 {assign the low bandwidth circuit}

Else

303 {decline the request}

300

Fig.3

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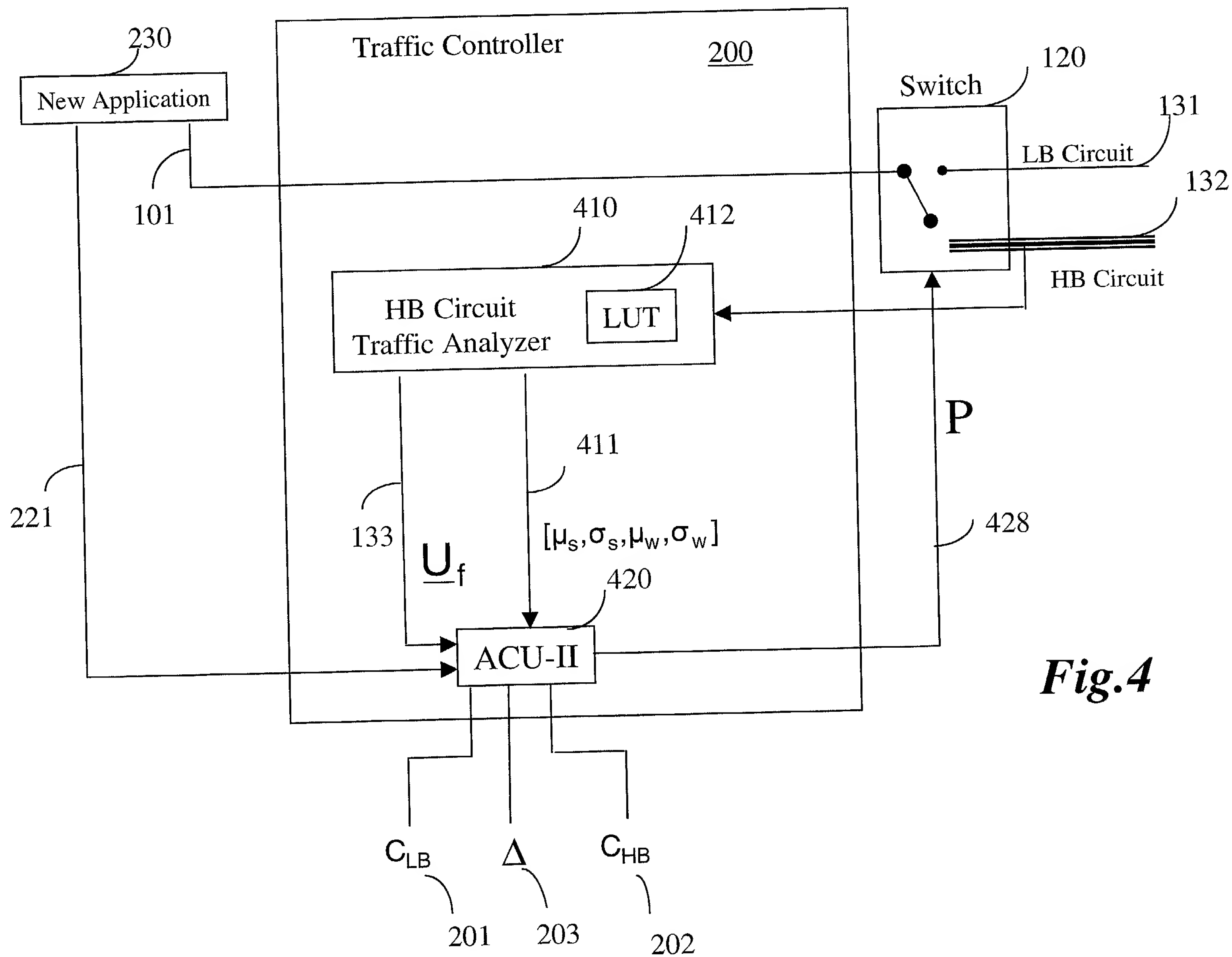

Fig.4

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500

ACU-II

If $\Pr\{\frac{s(n) + w(n)}{C_{hb}} > 1 - \Delta\} > \Pr\{\frac{s(n)}{C_{lb}} > 1\}$

{ If $\frac{D}{C_{lb}} < 1$

501 assign to the low bandwidth circuit;

}

Else If $\frac{D}{C_{hb}} < \frac{1}{M}(\sum_{i=0}^{M-1} U(n-1)) - \Delta$

502 {assign to high bandwidth circuit;

}

Else {decline the request} 503

Fig.5

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601

$$\Pr\{\frac{s(n) + w(n)}{C_{hb}} > 1 - \Delta\}$$

602

$$= \Pr\{s(n) + w(n) > C_{hb}.(1 - \Delta)\} = P\{y(n) > C_{hb}.(1 - \Delta)\}$$

$$= \int_{C_{hb}.(1-\Delta)}^{\infty} f_y(y)dy = \int_{C_{hb}.(1-\Delta)}^{\infty} \frac{1}{\sqrt{2\pi}\sqrt{\sigma_s^2 + \sigma_w^2}} e^{-\frac{(y-\mu_s-\mu_w)^2}{2(\sigma_s^2+\sigma_w^2)}} dy$$

$$= Q(\frac{C_{hb}.(1-\Delta)-\mu_s-\mu_w}{\sqrt{\sigma_s^2+\sigma_w^2}})$$

603

$$\Pr\{\frac{s(n)}{C_{lb}} > 1\}$$

604

$$= \Pr\{s(n) > C_{lb}\} = Q\{\frac{C_{lb} - \mu_s}{\sigma_s}\}$$

Fig.6

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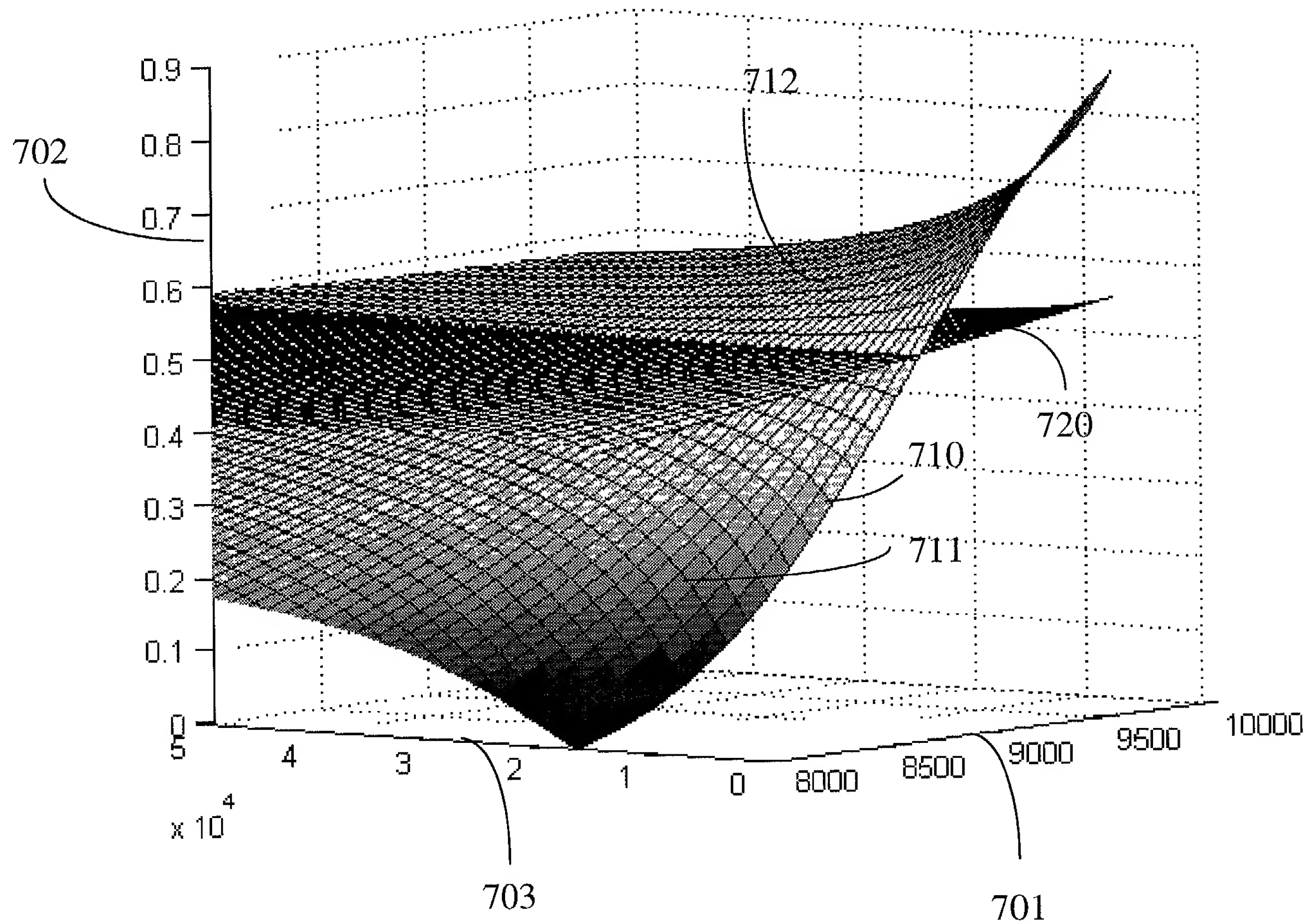

Fig.7